

What is claimed is:

1. A light source device, comprising:

a bulb inside which a discharge medium is sealed;

an internal electrode disposed at an end portion inside the bulb;

an external electrode disposed outside the bulb;

a holder member holding the external electrode so that the external electrode is opposed to the bulb with a predetermined distance of a space, and

a dielectric member disposed outside of the bulb at a position corresponding to the internal electrode so as to be interposed between the bulb and the external electrode.

2. The light source device according to claim 1, wherein the distance between the external electrode and the bulb is not less than a shortest distance defined by the following equation,

$$X L = \frac{V}{E 0} - \frac{\epsilon a}{\epsilon g} \times t g$$

X1L: shortest distance

E0: dielectric breakdown voltage

V: input voltage

$\epsilon_a$ : relative permittivity of air

$\epsilon_g$ : relative permittivity of a vessel wall of the bulb

$t_g$ : thickness of the vessel wall of the bulb.

3. The light source device according to claim 1 or 2, wherein the internal electrode comprises a proximal end positioned on an end portion side of the bulb, and a distal end positioned on a center portion side of the bulb relative to the proximal end, and

wherein a dimension of the dielectric member in an elongation direction of the bulb and a position of the dielectric member in the elongation direction of the bulb are set so that a distal end of an image of the internal electrode projected onto the external electrode is positioned on the dielectric member.

4. The light source device according to claim 3, wherein the dielectric member comprises a proximal end positioned on the end portion side of the bulb, and a distal end positioned on the center portion side of the bulb relative to the proximal end, and

wherein the proximal end of the dielectric member is positioned on the end portion side of the bulb relative to the distal end of the internal electrode, and the distal end of the dielectric member is positioned on the center portion side of the bulb relative to the distal end of the internal electrode.

5. The light source device according to any one of claims 1 to 4, wherein the dielectric member is disposed so as to be in contact with an outer surface of the bulb.
6. The light source device according to any one of claims 1 to 4, wherein the dielectric member is disposed so as to be in contact with the external electrode.
7. The light source device according to any one of claims 1 to 4, wherein the dielectric member comprises only a dielectric material.
8. The light source device according to claim 7, wherein the dielectric member is provided at a portion of an outer periphery of the bulb viewing in the elongation direction of the bulb.
9. The light source device according to claim 7 or 8, wherein a relative permittivity of the dielectric material is not less than 4.7.
10. The light source device according to any one of claims 1 to 4, wherein the dielectric member comprises a dielectric portion made of a dielectric material, and a conductive portion made of a conductive material.
11. The light source device according to claim 10, wherein the dielectric member is provided at a portion of an outer periphery of the bulb viewing in the elongation direction of the bulb.
12. The light source device according to claim 10 or 11, wherein the conductive portion is disposed inside the dielectric portion.

13. The light source device according to claim 12, wherein the dielectric portion comprises a first dielectric layer positioned on the side of the bulb and a second dielectric layer positioned on the side of the external electrode, and

wherein the conductive portion comprises a conductive layer disposed between the first dielectric layer and the second dielectric layer.

14. The light source device according to claim 13, wherein the conductive layer is a sheet member made of the conductive material.

15. The light source device according to claim 13, wherein the conductive layer is a mesh member made of a conductive material.

16. The light source device according to claim 12, wherein the conductive portion is an elongated member embedded in the dielectric portion.

17. The light source device according to any one of claims 1 to 4, further comprising a conductive member disposed within the bulb at a position corresponding to the internal electrode and the dielectric member.

18. The light source device according to claim 17, wherein the conductive member comprises a proximal end positioned on the end portion side of the bulb, and a distal end positioned on the center portion side of the bulb relative to the proximal end portion, and

wherein a dimension of the conductive member in an elongated direction of the bulb and a position of the conductive member in the elongation direction of the bulb are set so that a distal end of an image of the conductive member projected onto the external electrode is positioned on the dielectric member.

19. The light source device according to claim 18, wherein the conductive member is provided at a portion of the bulb viewing in the elongation direction of the bulb.

20. A lighting device, comprising:

the light source device according to any one of claims 1 through 19; and,

a light guide plate having a light incidence surface and a light emission surface and guiding a light emitted from the light source device from the light incidence face to the light emission face for emission.

21. A liquid crystal display device, comprising:

the lighting device according to claim 20; and

a liquid crystal display panel disposed so as to be opposed to the light emission face of the light guide plate.